



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

10/03

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,390	10/09/2003	Shu Xia Tan	CA920030042US1	8379
7590	06/23/2006		EXAMINER	
Diana L. Roberts Intellectual Property Law International Business Machines 11400 Burnet Road Austin, TX 78758			INGBERG, TODD D	
		ART UNIT	PAPER NUMBER	
			2193	
				DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/682,390	TAN ET AL.
	Examiner	Art Unit
	Todd Ingberg	2193

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 09 October 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-18 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 10/9/2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/9/03.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

DETAILED ACTION

Claims 1 – 18 have been examined.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The Information Disclosure Statement filed October 9, 2003 has been considered.

Drawings

3. The drawings filed October 9, 2003 are under objection because the pitch (size of characters) is too small for U.S. Patent literature. Figures 2, 4, 5, 6, 7A, 7B, 7C, 10 and 11 have the small lettering.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1 - 18 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The current focus of the Patent Office in regard to statutory inventions under 35 U.S.C. § 101 for method claims and claims that recite a judicial exception (software) is that the claimed invention recite a practical application. Practical application can be provided by a physical transformation or a useful, concrete and tangible

result. No physical transformation is recited and additionally, the final result of the claim is generating a document which is not a tangible result because the claim does not claim writing, storing or updating to a computer readable medium. The following link on the World Wide Web is for the United States Patent And Trademark Office (USPTO) policy on 35 U.S.C. §101.

http://www.uspto.gov/web/offices/pac/dapp/opla/preognitice/guidelines101_20051026.pdf
The stack of claim 6 can be modified to be tangibly embodied on a computer readable medium.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 – 2 and 4 - 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Symbolic Debugging of Optimized Code, John Hennessy, ACM 1982.

Claim 1

ACM anticipates a method of generating a deploy document describing an optimized flow that corresponds to a user defined flow, said method comprising: creating a connections mapping table wherein a connection in said optimized flow is associated with at least one connection in said user defined flow. (ACM, page 326, Figure 1 and page 329, Figure 4).

Claim 2

The method of claim 1 further comprising including information in said deploy document that allows said connections mapping table to be recreated by a receiver of said deploy document. as per claim 1 optimized and unoptimized code.

Claim 4

A compiler operable to create a connections mapping table wherein a connection in an optimized flow, which corresponds to a user defined flow (ACM, page 324, breakpoint set by user – middle of page), is associated with at least one connection in said user defined flow. As per claim 1 above.

Claim 5

ACM anticipates a computer readable medium containing computer-executable instructions which, when performed by a processor in a computer system, cause said computer system to create a connections mapping table wherein a connection in an optimized flow (ACM, DAG front cover), which corresponds to a user defined flow (ACM, page 324 ,breakpoint), is associated with at least one connection in said user defined flow (Inherent relationship of DAGs to the executable).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Symbolic Debugging of Optimized Code, John Hennessy, ACM 1982 in view of Regular Expression Pattern Matching for XML, Haruo Hosoya et al (XML), January 2001 ACM.

Rejection for Claim 3

ACM teaches debugging optimized code but does not teach the source as having been XML.

XML teaches XML and further teaches the core features of programming languages are supported by XML (XML, Abstract). Therefore, it would have been obvious to one of ordinary skill in the art to debug optimized code that was of XML as a source, because, debugging code makes it more reliable.

Claim 3

The method of claim 2 wherein said deploy document is formatted in the eXtensible Markup Language.

8. Claims 5 – 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Symbolic Debugging of Optimized Code, John Hennessy, **ACM** 1982 in view of How Debuggers Work by J.B. Rosenberg (**Debug**).

Motivation to Combine

ACM teaches internals of debugging optimized programs but not explicitly stack operations. Debug teaches the high level of how debuggers work and debuggers working with optimized code including stack operations. ACM does not explicitly teach the internals of stack operations for optimized code. It is Debug who teaches stack operations. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to combine ACM and Debug, because ensuring optimized code works properly makes programs more correct.

Claim 6

ACM teaches a method of executing an optimized flow that is derived from a user defined flow (ACM, pages 324 and 331, Setting a Breakpoint), each of said optimized flow and said user defined flow comprising a plurality of nodes connected by a plurality of connections (ACM, front cover DAG), said method comprising: constructing a stack associated with a terminal of a given node of said plurality of nodes in said optimized flow (Debug, pages 136-144, 9, 10 and 26), said terminal connecting to a given optimized flow connection of said plurality of connections in said optimized flow, where said given optimized flow connection is associated with at least one user flow connection of said plurality of connections in said user defined flow; reporting imminent execution of said given optimized flow connection (As per above); receiving an instruction to push an indication of a particular user flow connection (stack as per above), among said at least one user flow connection associated with said given optimized flow connection, into said stack; and responsive to receiving said instruction to push, pushing said indication of said particular user flow connection into said stack (Breakpoint and stack operations as per above).

Claim 7

The method of claim 6 further comprising: receiving an instruction to delay said execution of said given optimized flow connection; and responsive to receiving said instruction to delay, delaying said execution of said given optimized flow connection pending receipt of a corresponding resume instruction. (As per claim 6 and Debug, pages 107-119, the execution of the actual breakpoint)

Claim 8

The method of claim 6 further comprising: receiving an instruction to resume said execution of said given optimized flow connection; and responsive to receiving said instruction to resume, resuming said execution of said given optimized flow connection. (Debug, pages 74 and 177).

Claim 9

The method of claim 6 further comprising constructing a new stack associated with said terminal of said given node for each iteration of a loop. (ACM, pages 377-340, loops).

Claim 10

A runtime for executing an optimized flow that is derived from a user defined flow, each of said optimized flow (Debug, pages 136-144) and said user defined flow comprising a plurality of nodes connected by a plurality of connections, said runtime operable to:

construct a stack associated with a terminal of a given node of said plurality of nodes in said optimized flow, said terminal connecting to a given optimized flow connection of said plurality of connections in said optimized flow, where said given optimized flow connection is associated with at least one user flow connection of said plurality of connections in said user defined flow; report imminent execution of said given optimized flow connection; receive an instruction to push an indication of a particular user flow connection, among said at least one connection associated with said given optimized flow connection, into said stack; and push said indication of said particular user flow connection into said stack. As per claim 6.

Claim 11

A computer readable medium containing computer-executable instructions which, when performed by a processor in a computer system for executing an optimized flow that is derived from a user defined flow, each of said optimized flow and said user defined flow comprising a plurality of nodes connected by a plurality of connections, cause said computer system to:

construct a stack associated with a terminal of a given node of said plurality of nodes in said optimized flow, said terminal connecting to a given optimized flow connection of said plurality of connections in said optimized flow, where said given optimized flow connection is associated with at least one user flow connection of

said plurality of connections in said user defined flow; report imminent execution of said given optimized flow connection; receive an instruction to push an indication of a particular user flow connection, among said at least one connection associated with said given connection, into said stack As per claim 6 above; and push said indication of said particular user flow connection into said stack (Debug, pages 82 and 137).

Claim 12

A method of controlling a runtime for debugging a user defined flow that has been compiled into an optimized flow, each of said optimized flow and said user defined flow comprising a plurality of nodes connected by a plurality of connections, said method comprising: receiving a report, from said runtime, of imminent execution of a given optimized flow connection of said plurality of connections in said optimized flow; querying said runtime to identify at least one userflow

connection of said plurality of connections in said user defined flow associated with said given optimized flow connection; determining whether a breakpoint has been placed on a first userflow connection of said at least one user flow connection in said user defined flow; responsive to determining a breakpoint has been placed on said first user flow connection, determining whether an indication of said first user flow connection exists in a stack associated with a terminal of a given node of said plurality of nodes in said optimized flow, said terminal connecting to said given optimized flow connection; and responsive to determining said indication does not exist in said stack, instructing said runtime to push an indication of said first user flow connection into said stack. As per claim 6.

Claim 13

The method of claim 12 further comprising instructing said runtime to pause execution of said optimized flow. (Debug, pages 107-119, executing the breakpoint).

Claim 15

The method of claim 13 further comprising: determining whether said execution of said optimized flow is paused; and only instructing said runtime to pause if said execution is not already paused. (Breakpoint as per claim 6 – best interpretation of claim language)

Claim 15

The method of claim 14 further comprising: receiving an instruction from a user to continue execution; and determining whether further user flow connections in said user defined flow are associated with said given optimized flow connection. (Debug, pages 74 and 177).

Claim 16

The method of claim 15 further comprising: responsive to determining that further user flow connections in said user defined flow are associated with said given optimized flow connection, determining whether a breakpoint has been placed on a subsequent user flow connection of said further user flow connections; responsive to determining a breakpoint has been placed on said subsequent user flow connection, determining whether an indication of said subsequent user flow connection exists in said stack; and responsive to determining said indication of said subsequent user flow connection does not exist in said stack, instructing said runtime to push an indication of said subsequent connection into said stack. As per claim 6.

Claim 17

A debugger for debugging a user defined flow that has been compiled into an optimized flow, each of said optimized flow and said user defined flow comprising a plurality of nodes connected by a plurality of connections, said debugger operable to:
receive a report, from a runtime, of imminent execution of a given optimized flow connection of said plurality of connections in said optimized flow;
query said runtime to identify at least one user flow connection of said plurality of connections in said user defined flow associated with said given optimized flow connection;
determine whether a breakpoint has been placed on a first user flow connection of said at least one user flow connection in said user defined flow;

determine whether an indication of said first user flow connection exists in a stack associated with a terminal of a given node of said plurality of nodes in said optimized flow, said terminal connecting to said given optimized flow connection; and instruct said runtime to push an indication of said first user flow connection into said stack. As per claim 6.

Claim 18

A computer readable medium containing computer-executable instructions that, when performed by a processor in a computer system for debugging a user defined flow that has been compiled into an optimized flow, each of said optimized flow and said user defined flow comprising a plurality of nodes connected by a plurality of connections, cause said computer system to: receive a report, from a runtime, of imminent execution of a given optimized flow connection of said plurality of connections in said optimized flow; query said runtime to identify at least one user flow connection of said plurality of connections in said user defined flow associated with said given optimized flow connection; determine whether a breakpoint has been placed on a first user flow connection of said at least one connection in said user defined flow; determine whether an indication of said first user flow connection exists in a stack associated with a terminal of a given node of said plurality of nodes in said ; and instruct said runtime to push an indication of said first user flow connection into said stack. As per claim 17.

Correspondence Information

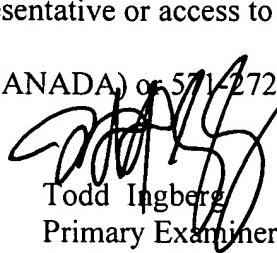
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Todd Ingberg whose telephone number is (571) 272-3723. The examiner can normally be reached on during the work week..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

Art Unit: 2193

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Todd Ingberg
Primary Examiner
Art Unit 2193

TI